



ICAO ENGINE EXHAUST EMISSIONS DATA SHEET

SUBSONIC ENGINES

ENGINE IDENTIFICATION: Trent 1000-D
 UNIQUE ID NUMBER: 11RR051
 COMBUSTOR: Phase5 Tiled
 ENGINE TYPE: TF

BYPASS RATIO: 9.3
 PRESSURE RATIO (π_{00}): 43.8
 RATED THRUST (F_{00}) (kN): 334.7

REGULATORY DATA **** DATA SUPERSEDED **** SEE FOLLOWING UID FOR REVISED DATA: **12RR057**

CHARACTERISTIC VALUE:	HC	CO	NO _x	SMOKE NUMBER
D _p /F ₀₀ (g/kN) or SN	0.1	10.5	66.3	5.8
AS % OF ORIGINAL LIMIT	0.3	8.9	52.0	33.8
AS % OF CAEP/2 LIMIT (NO _x)			64.9	
AS % OF CAEP/4 LIMIT (NO _x)			70.1	
AS % OF CAEP/6 LIMIT (NO _x)			76.6	
AS % OF CAEP/8 LIMIT (NO _x)			85.3	

DATA STATUS

- PRE-REGULATION
 x CERTIFICATION
 - REVISED (SEE REMARKS)

TEST ENGINE STATUS

- NEWLY MANUFACTURED ENGINES
 x DEDICATED ENGINES TO PRODUCTION STANDARD
 - OTHER (SEE REMARKS)

EMISSIONS STATUS

x DATA CORRECTED TO REFERENCE
 (ANNEX 16 VOLUME II)

CURRENT ENGINE STATUS

(IN PRODUCTION, IN SERVICE UNLESS OTHERWISE NOTED)
 x OUT OF PRODUCTION (DATE: -)
 - OUT OF SERVICE (DATE: -)

MEASURED DATA

MODE	POWER SETTING (%F ₀₀)	TIME (minutes)	FUEL FLOW (kg/s)	EMISSIONS INDICES (g/kg)			SMOKE NUMBER
				HC	CO	NO _x	
TAKE-OFF	100	0.7	2.508	0.00	0.51	53.54	3.0
CLIMB OUT	85	2.2	2.048	0.00	0.48	40.33	3.8
APPROACH	30	4.0	0.668	0.00	0.68	13.86	3.1
IDLE	7	26.0	0.246	0.04	7.66	5.66	0.6
LTO TOTAL FUEL (kg) or EMISSIONS (g)			75	14	3238	20942	-
NUMBER OF ENGINES				3	3	3	3
NUMBER OF TESTS				5	5	5	5
AVERAGE D _p /F ₀₀ (g/kN) or AVERAGE SN (MAX)				0.0	9.7	62.6	5.2
SIGMA (D _p /F ₀₀ in g/kN, or SN)				0.0	2.8	1.0	2.0
RANGE (D _p /F ₀₀ in g/kN, or SN)				0-0.1	5.8-12.2	61.5-63.8	3-8.2

ACCESSORY LOADS

POWER EXTRACTION 0 (kW) AT - POWER SETTINGS
 STAGE BLEED 0 (% CORE FLOW) AT - POWER SETTINGS

ATMOSPHERIC CONDITIONS

BAROMETER (kPa)	98.9-102.1
TEMPERATURE (K)	284.1-290.3
ABS HUMIDITY (kg/kg)	0.00432-0.00721

FUEL

SPEC	
H/C	1.89
AROM (%)	16.7

MANUFACTURER: Rolls-Royce plc
 TEST ORGANIZATION: Rolls-Royce
 TEST LOCATION: Derby
 TEST DATES: 24/09/2009-09/06/2011

NO_x REGULATION PARAGRAPH

	2.3.2 c) (CAEP/4)
x	2.3.2 d) (CAEP/6)
	2.3.2 e) (CAEP/8)

REMARKS

1. Representative of Package B engines

Compliance with Fuel Venting requirements:

- ('x' if complies, 'PR' if pre-regulation, '-' if information is not available)